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Silviculture Prescription
South County Road

Massachusetts Department of Conservation and Recreation
Bureau of Forestry

Northern Berkshire District
Florida State Forest
Florida, MA

Prepared by:

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Approved by:

Management Forestry
Program Supervisor_____ Date: November 6, 2017
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Site Data

Geology

This project is located within the Hoosac Mountain Range, on the south slope of Flat Rock Hill. The general project area has an average slope of 9% - 10% with a gradual increase in steepness on the north end of the sale, which is also nearer to the peak of Flat Rock Hill. The parent material is composed of loamy supraglacial till derived from one or more of the following materials: granite, gneiss, phyllite, and/or mica schist. Within the context of this project site degradation as a result of elevation and/or topography are not anticipated.

Soils

Ninety eight percent of the soils located within the project are of the Tunbridge – Lymann soil association. This association is characterized by deep sandy loam soils that are well drained, but very stony. This soil association is found on slopes of 3% - 15% and at elevations of approximately 1,100 ft. – 2,400 ft. Annual precipitation is 31" – 95" per year, and the mean annual temperatures run 27^{o}F – 52^{o}F. Frost-free periods range from 60 days – 160 days per year, and it is not considered prime farmland. According to the Forest Productivity and Stand Complexity Model (Goodwin, Hill. 2012) the in general terms best sites are located near the base of the slope, and become less productive with elevation. This would indicate that combinations of both uneven aged and even aged management may be most appropriate for the site. The changes in productivity with elevation will also dictate how these strategies are implemented. According to the USDA NRCS online soil survey the soils located within this project have a slight potential for erosion under normal conditions, and as such loss of site quality and productivity are not anticipated as a result of activities related to this project.

Climate

The mean annual temperature for the sale area is 41^{o}F with an average of 46" of precipitation. Tropical storm systems do not typically affect this area but occasionally make impacts with the most recent being Tropical Storm Irene in 2011. Nor'easters and strong cold fronts from Canada have the potential for major impacts, and occur more regularly. Other erratic weather events such as ice storms, early season blizzards, microbursts, and even tornados are not uncommon. These weather events are the primary forces influencing the disturbance ecology of the area, and are expressed in the landscape as gaps in the forest canopy.

Hydrology

All of the wetland resources indicated on MAP 1 have been located. They currently consist of 2 intermittent streams that begin as seeps within the sale area and flow down into Cold River. Also indicated on MAP 1, are the potential locations of filter strips that

will be used for water and wetland resource protection, and will be in compliance with current Massachusetts Forestry Best Management Practices. Typical water resources encountered during the marking phase of the project, that do not currently appear on MAP 1, include small intermittent streams and wooded wetlands that were too small to detect during the initial DEP wetland mapping project. If additional wetlands such as non-certified vernal pools, additional intermittent streams, upland wetlands, etc. are encountered; standards outlined in the most recent edition (currently 2013 2nd edition) Massachusetts Forestry Best Practices Manual will be followed as they relate to harvesting requirements, filter strips, water bars, slash management, etc.

Potential Vegetation

The area currently supports all potential vegetation that is typical to this type natural community and forest cover type, that being mixed northern hardwoods with a significant coniferous component. Overstory tree species present include red oak (*Quercus rubra)*, sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), white birch *(Betula papyrifera*), yellow birch (*Betula, alleghaniensis*), white ash (*Fraxinus Americana*), eastern white pine (*Pinus strobus*), red spruce (*Picea rubens*), Norway spruce (*Picea abies*), black cherry (*Prunus serotina*), black birch (*Betula lenta*), Eastern Hemlock (*Tsuga canadensis*)American beech (*Fagus grandifolia*), and hophornbeam (*Ostrya viginiana*). Ground cover species include princess pine (*Lycopodium spp.*), sarsaparilla (*Aralia nudicaulus*), various ferns, Indian cucumber (*Mediola virginiana*), Canada mayflower (*Maianthemum canadense*), serviceberry (*Amelanchier spp.*), striped maple (*Acer pensylvanicum*), hobblebush (*Vibernum lantanoides*), witch hazel (*Hamamelis virginiana*), wood sorrel (*Oxlis spp.*), mountain-ash (*Sorbus americana*), and highbush blueberry (*Vaccinium corymbosum*).

One of the goals of this forest management project is to begin the removal of Norway spruce plantations, an exotic species of vegetation, and encourage conditions for the recruitment of native flora.

Site Productivity

An analysis was conducted across all properties managed by the Bureau of Forestry to assess site productivity and complexity using Geographic Information System (GIS) data layers of Prime Forest Soils, Potential Vegetation Complexity, Late Successional potential, Forest Diversity, Early Successional potential, CFI Site Index, and CFI Stand Structure (Goodwin, Hill, 2012). The analysis found that 28% of the area ranked in the top 1/3 of the productivity scale, while 38% ranked in the bottom 1/3 of the productivity scale. Due to the moderate productivity of the hardwood area and the existing trend towards an uneven aged condition, a gap-expanding irregular shelterwood method will be employed to mimic natural disturbance and begin the process of converting an even-aged stand to an uneven-aged stand. Within the Norway spruce plantations, three openings of one acre in size will be installed.

Archeological and Cultural Resources

The DCR archeologist noted that there are "No known or significant historic or archaeological resources in the project parcel. Any cultural resource features located before or during the forestry project will be protected according to guidelines set forth in the *Bureau of Forestry Cultural Resource Management Protection Standards and Guidelines* and indicated on harvest maps accordingly.

Additional actions that are intended to protect cultural resources include:

- GPS, photograph, flag/protect and avoid cellar holes, stone walls, wells, trash pits and other associated cultural features located within the project area.
- Existing breaks in stone walls will be utilized to protect the integrity of the stone walls.
- Existing roads, landing areas and skid trails will be re-used during operations.
- Trees will be felled away from the road.
- Timber Sale Contract language designed to protect cultural resources requires timber harvesters immediately report any undocumented cultural resources.

Stand Data

Forest Stand Attributes

The South County road Project is approximately 90 +/- acres in size with 6 +/- acres of Norway spruce plantation and 84 +/- acres of mixed northern hardwoods and oak (oak/hardwood cover type). The most significant species in the oak/hardwood stand are: red oak, sugar maple, American beech, red maple, and yellow birch. There is also a minor coniferous component to the stand which includes: eastern hemlock, eastern white pine, and red spruce.

Stand History

Oak/Hardwood Stand:

This stand is composed of trees that colonized the area after farms and grazing areas were abandoned around the turn of the century. Throughout the sale area evidence of previous agriculture activities are evident with the presence of stone walls and remnant field trees. Since the areas were abandoned there is no evidence of previous management activities; i.e.: old skid trails, stumps, etc.

Norway Spruce Plantation:

A 1937 map of the Savoy State Forest Master Plan between the United States Department of the Interior and the Massachusetts Department of Conservation depicts the South County Road project area as part of a

much larger "Forestry Area". Based upon the type of work that was normally undertaken at the time, within Savoy Mountain State Forest and Florida State Forest, it is likely that a Forestry Area is where hand-planted Norway spruce and/or white pine plantations were installed. According to the map, Forestry Areas are located throughout Florida and Savoy Mountain State Forests, and the projects were conducted by the Civilian Conservation Corps.

The specific plantations within the South County Road project were never properly maintained for growth, production, and/or diversity and are now in a state of decline. Root diseases coupled with severe weather events have caused significant blow-down. Soils under Norway spruce plantations are often more acidic than soils under other species. Soil acidity appears to increase with stand age as soil buffering capacity decreases with age. (Binkley, Dan; Valentine, David. 1991) Due to the acidic soils, the rate at which other species can colonize the site is reduced leaving relative densities moderate with a significant amount of growing space unoccupied.

The following are descriptions of the forest types located within the entire sale area (MAP 1).

Oak/Hardwood

The largest single species stand components include red oak, red maple, eastern white pine, and hemlock. Other merchantable species within the stand include yellow birch, white birch, black birch, sugar maple, American beech, black cherry, and red spruce. This stand is trending towards an uneven aged condition with an average basal area of 133.3 ft^2/ac, with a 98% relative density[1]. Though there is not any evidence of previous logging operations, there are numerous indicators of natural disturbance that have contributed to the uneven aged condition; i.e.: blowdowns, ice damage, uprooted stems, etc. Most of the natural regeneration present is oak and red maple. Overall the stand is healthy, and this project is intended to ensure that this continues.

Norway Spruce Plantation

The Norway spruce plantation is dominated by Norway spruce, but has some areas of where eastern white pine was also planted. In the areas where the Norway spruce has died holes in the canopy coupled with unoccupied growing space has facilitated native tree recruitment, generally red oak, red maple, and eastern white pine. This is an even aged stand and will be reduced by 50% during this entry. The current basal area is 196.7

[1] *Relative density is the absolute density expressed as a percentage of a referenced level. For example, in this prescription the hardwood stand has an absolute basal area per acre of 133.3 ft_2 which is 98% of full site occupancy. Full site occupancy would be approximately 136 ft_2. At this relative density level there is a high level of completion between trees which often results in poor tree vigor and mortality.*

ft^2/ac, with a relative density of 85%. As with the Oak/Hardwood stand there is no evidence of previous logging activities.

Land Use History

The hardwood stand and Norway spruce plantations demonstrate typical land-use patterns consistent with the northeast. The area may have had homesteads that cleared areas for firewood and livestock, and after the homesteads were abandoned the area reforested naturally. More recently, the young mature; even-aged hardwoods indicate that the land was cutover at some point within the last 100 - 120 years and was again left to reforested naturally. The fact that the area had been completely deforested within the same time frame as the efforts by the Civilian Conservation Corps to perform reforestation work, likely drove the decision install the Norway spruce plantations in the 1930's. Since that time active harvesting has occurred on the surrounding public and private lands.

Stand Exam

A stand exam of this project was completed in September of 2017 with the following results:

Oak/Hardwood Stand

Figure 1 – Oak/Harwood Species Composition

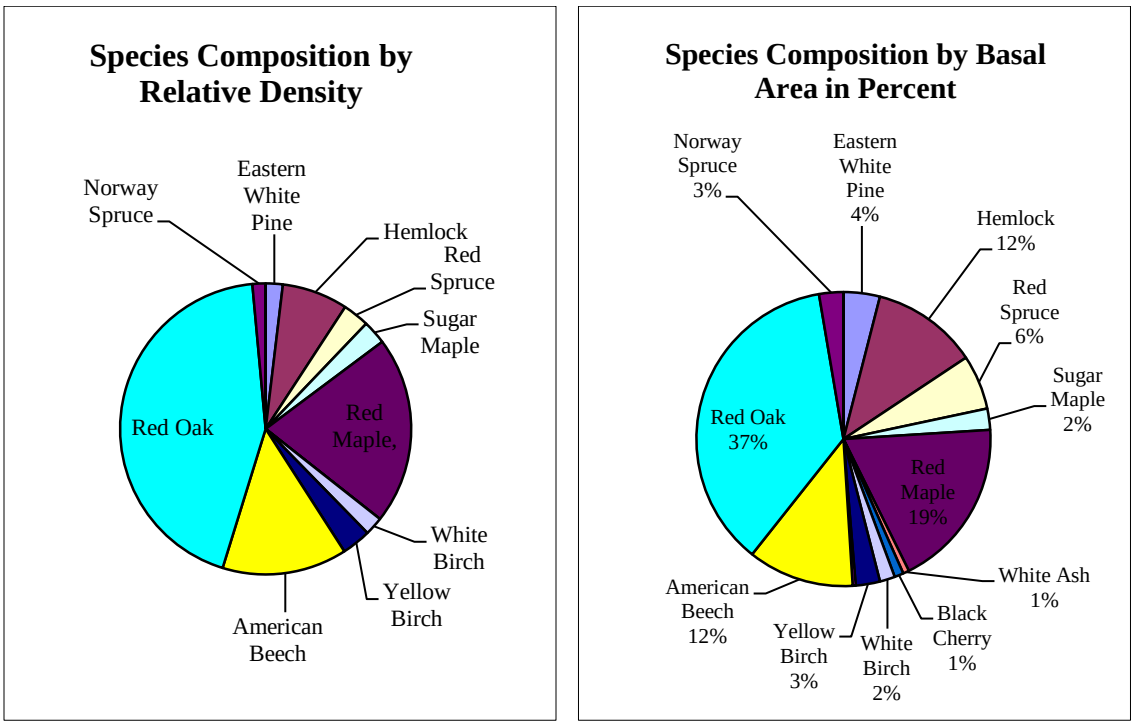


Table 1 – Stocking Diagnostics of Oak/Hardwood Stand

Spp	Total Trees/Acre	Total BA/Acre	% BA/ac by Spp	QMD	Rel Density
Eastern White Pine	3.3	5.3	4%	17.3	1.9
Hemlock	16.2	15.6	12%	13.3	7.2
Red Spruce	10.4	8.0	6%	11.9	2.9
Sugar Maple	6.0	3.1	2%	9.8	2.6
Red Maple	42.3	24.9	19%	10.4	20.5
White Ash	1.4	0.9	1%	10.8	0.0
Black Cherry	2.1	1.3	1%	10.8	0.0
White Birch	6.5	2.2	2%	7.9	2.0
Yellow Birch	13.3	3.6	3%	7.0	3.2
Black Birch	0.7	0.4	0%	10.8	0.0
American Beech	49.8	15.6	12%	7.6	13.6
Red Oak	47.5	48.9	37%	13.7	43.0
Norway Spruce	6.2	3.6	3%	10.2	1.4
Total	205.6	133.3	100%	10.9	98
			Median Stand Diameter->>	13.3	100

<<- ***Estimated Relative Density***

<u>Norway Spruce Plantation</u> –

Figure 2 – Norway Spruce Plantation Species Composition

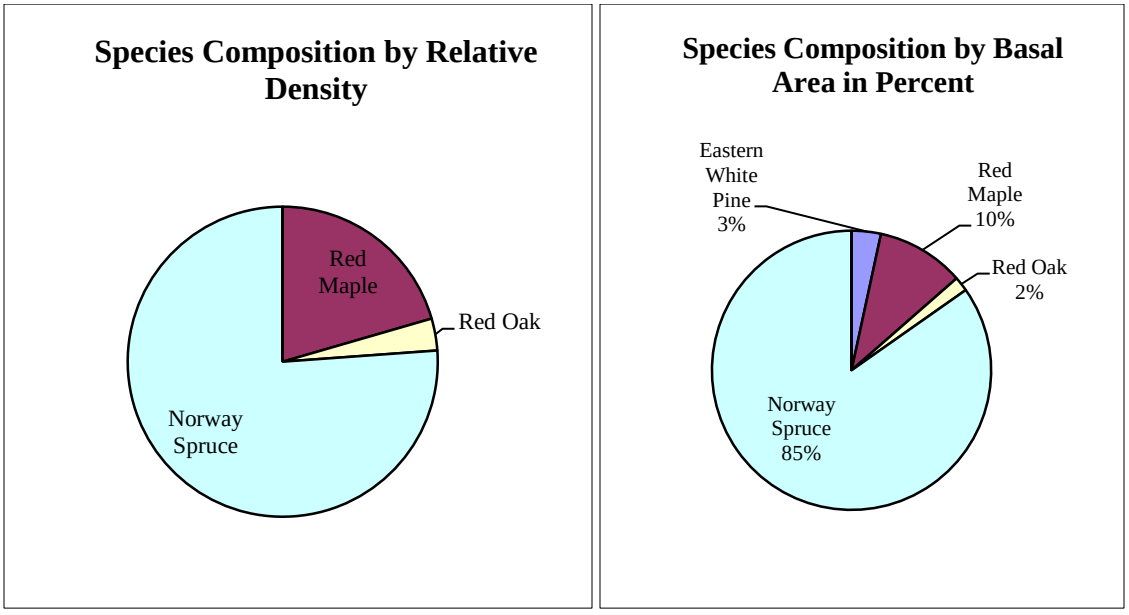


Table 2 – Norway Spruce Plantation Stocking Diagnostics

Spp	Spp Code	Total Trees/Acre	Total BA/Acre	% BA/ac by Spp	QMD	Rel Density	
Eastern White Pine	**1**	**13.4**	**6.7**	**3%**	**9.6**	**0.0**	
Red Maple	**7**	**66.1**	**20.0**	**10%**	**7.4**	**17.5**	
Red Oak	**16**	**1.4**	**3.3**	**2%**	**21.2**	**2.8**	
Norway Spruce	**26**	**286.2**	**166.7**	**85%**	**10.3**	**64.8**	
Total		**367.0**	**196.7**	**100%**	**9.9**	**85**	
				Median Stand Diameter - >>	**11.9**	**88**	***<<- Estimated Relative Density***

Table 3 – Advanced Regeneration within the Project Area

SPECIES	Stems/Acres
Eastern White Pine	24.49
Norway Spruce	97.96
American Beech	685.71
Red Maple	342.86
Red Oak	612.24

SPECIES	Stems/Acres
Eastern Hemlock	48.98
Red Spruce	134.69
Hophornbeam	6.12
Yellow Birch	30.61
Black Cherry	73.47

Table 4 – Ground Cover within the Project Area

SPECIES	AVG. % COVER	% of plots observed	
Lycopodium	0.61	4.08	
Canada Mayflower	1.02	6.12	
Indian Cucumber	0.41	4.08	
Partridge Berry	0.20	2.04	
Ferns	12.55	46.94	
Hobblebush	8.57	26.53	
Serviceberry	0.41	4.08	
Sarsaparilla	0.41	4.08	
Wood Sorrel	0.51	2.04	
Mountain-Ash	0.20	2.04	

SPECIES	AVG. % COVER	% of plots observed
Striped Maple	5.10	10.20
Highbush Blueberry	3.67	12.24
Witch Hazel	1.43	4.08

Within the South County Road sale area it is estimated that there is 201 ft^3/ac of course woody debris (CWD) on the ground. The minimum retention guideline listed in the DCR Management Guidelines (2012) is 256 ft^3/ac. In order to increase the amount of CWD on the ground, cull trees will be required to be felled, tops will be left in the woods, and marked trees less than 6" in diameter will be felled and remain in the woods.

Aesthetic Resources

This project is not anticipated to have a negative impact along South County Road, or, the Flat Rock Hill Trail. Neither area is designated as a scenic highway and/or byway, and 50' buffer strips where not more than 50% of the basal area is removed will be placed along South County Road and Flat Rock Hill Trail.

Recreation Resources

Hunting: This area has a long history of hunting and is a popular spot. Deer, bird, and small game hunters frequent the area during open seasons.

Wildlife Viewing: Due to the presence of moose and alpine vegetation, Florida State Forest is a popular destination for this user group. Moose sign has been observed in the project area.

Trails: Flat Rock Hill Trail bounds the western boundary of the sale and is used primarily by snowmobiles during the winter, though some summer use by hikers is not uncommon. The trail is in fair condition, and may be used for skidding and/or forwarding during this sale. At the completion of harvesting activities the trail will be restored to its original condition.

Threatened and Endangered Species

There are no Threated or Endangered Species (TNE), critical habitats, or estimated habitats of TNE species listed in the 13th edition of the Mass Natural heritage Atlas. However, the area is near an area designated as Reserve by the 2012 Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines. The Massachusetts Natural Heritage and Endangered Species Program wrote that the "Project is outside mapped habitat however, the site is adjacent to an area mapped for a species of butterfly State-listed as Threatened. The larval stages of this species feed on beech tree leaves. The Division recommends retaining reproductively mature and disease free beech trees throughout the treatment area." These recommendations are a routine activity for timber sales conducted within the North Berkshire District, and usually even diseased beech is left behind so as to not violate standards listed in the 2012 Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines. The DCR ecologist noted that there are "No concerns with this proposal as described and depicted on the maps.

Wildlife

Species

The wildlife occurring in this area is typical of a northern hardwood forest. Observed species include black-capped chickadee, white-tail deer, blue jay, and common crow. Other species expected to occur are black bear, moose, various songbirds, ruffed grouse, snowshoe hare, raccoon, various fur bearers, grey squirrel, red squirrel, various raptors, and other small mammals such as bats and rodents.

The Mass Division of Fisheries and Wildlife noted that ""full sunlight" on the forest floor is [not] achieved until you have at least one acre of opening." The DCR is not in full agreement with this opinion. One third acre gaps do receive full sunlight for certain periods of the day, especially during the summer months. These gaps can also be coupled with existing openings or C-Line thinning to improve the duration and intensity of sunlight. These strategies may be employed during marking activities.

The Mass Division of Fisheries and Wildlife also commented that "[Norway spruce plantations are] Well suited to regeneration by clearcut with reserves, taking care not to operate machinery within the best patches of red oak and sugar maple regeneration." Clearcutting with reserves on this site is not currently within the best interests of the DCR, and as such, will not pursue that course of action.
The Mass Division of Fisheries and Wildlife commented "Suggest combining the first and second entries to get the temporary benefit of a 5+ acre area of young forest habitat. That's the minimum size needed to provide meaningful habitat for early-successional forest songbirds other associated wildlife." The DCR intends to remove the remaining plantation with a second interval, and will be able to support this recommendation.

The Mass Division of Fisheries and Wildlife expressed concern with the concept of "superior white ash between 14" and 16" in diameter will be biased for leaving." The occurrence of these trees is very minimal, and a bias does not mean that the tree cannot be cut. Rather, superior trees will be given special consideration for leaving so as to potentially pass on these characteristics to future progeny.

Snags and Retained Live Trees

All snags will be retained on-site provided that they do not pose a hazard to humans during or after operations. Live trees that appear to be a den or nest site either currently or in the recent past will also be retained.

Evaluation of the Data and Projected Results

The Massachusetts Department of Conservation and Recreation has developed a list of ecological services and benefits derived from active forest management of Woodland

Zones (Exhibit 1). The following are lists of goals and objectives for the South County Road Project and the associated ecological services and benefits that are satisfied.

Goals and Objectives of the South County Road Project

Goal 1: Successful Implementation of Silvicultural Prescription (MA DCR Goal – **Production of Wood Products, Diversified Habitats, Carbon Stock Management, Water, Recreational Opportunities**).

Objectives

- Residual relative basal areas at 56% within the hardwood stand with between 80 ft^2 and 53 ft^2 BA/ac. Residual relative densities within the Norway spruce openings at less than 10% with between 0 and 20 ft^2 BA/ac.
- No cutting or harvesting within filter strips.
- No cutting or harvesting within 75' of identified cultural resources other than stone walls.
- No loss of undesignated wood.
- Ensure harvesting contractor compliance with all BMP's.
- Frequently monitor operations to minimize and/or mitigate damage to the site.
- Ensure full understanding of contractual requirements by the harvesting contractor.
- Residual CWD greater than 201 ft^3 per acre.

Residual basal area ranges provided within the objectives and the Silvicultural Prescription section were determined using the Fox DS Cruiser version 2007.2 Workhorse (New Hampshire Forests & Lands Staff, 2009) which analyzes inventory data gathered in the field, and comparing those results with stocking tables located in the Silvicultural Guide for Northern Hardwoods in the Northeast (Leak et al., 2014)

Goal 2: Adequate Stocking in Single Tree and Group Selection Areas (**MA DCR Goal – Diverse Habitats & Carbon Stock Management**).

Objectives

- Have 500+ stems per acre of healthy native hardwood or softwood regeneration across the stand, with the exception of those species which can dominate a site; i.e.: striped maple, pin cherry, etc.; within 5 years of the harvest.
- Reduced beech regeneration competition with native tree regeneration and ground cover.

Goal 3: Increase biological diversity and introduce more complexity into existing stands (**MA DCR Goal – Diverse Habitats & Water**).

Objectives

- Install gaps within the existing Norway spruce stand in order to create early successional habitat and begin a new age class of trees.
- Utilize single tree selection within the Oak/Hardwood stand in order to continue the trend towards and uneven aged stand.

Goal 4: Remove beech infected with Beech Bark Disease Complex (BBD) (MA DCR Goal – **Diverse Habitats).**

Objective

- Beech that show clear signs of BBD will be biased for removal, while adhering to the guidelines established in the Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines (2012). Particularly those guidelines relating to legacy trees and opening sizes.

Goal 5: Commence the process of removing the off-site Norway spruce plantations.

Objective

- Approximately ½ of the area within the existing Norway spruce plantation will be removed through group selection openings.

Silvicultural Prescription

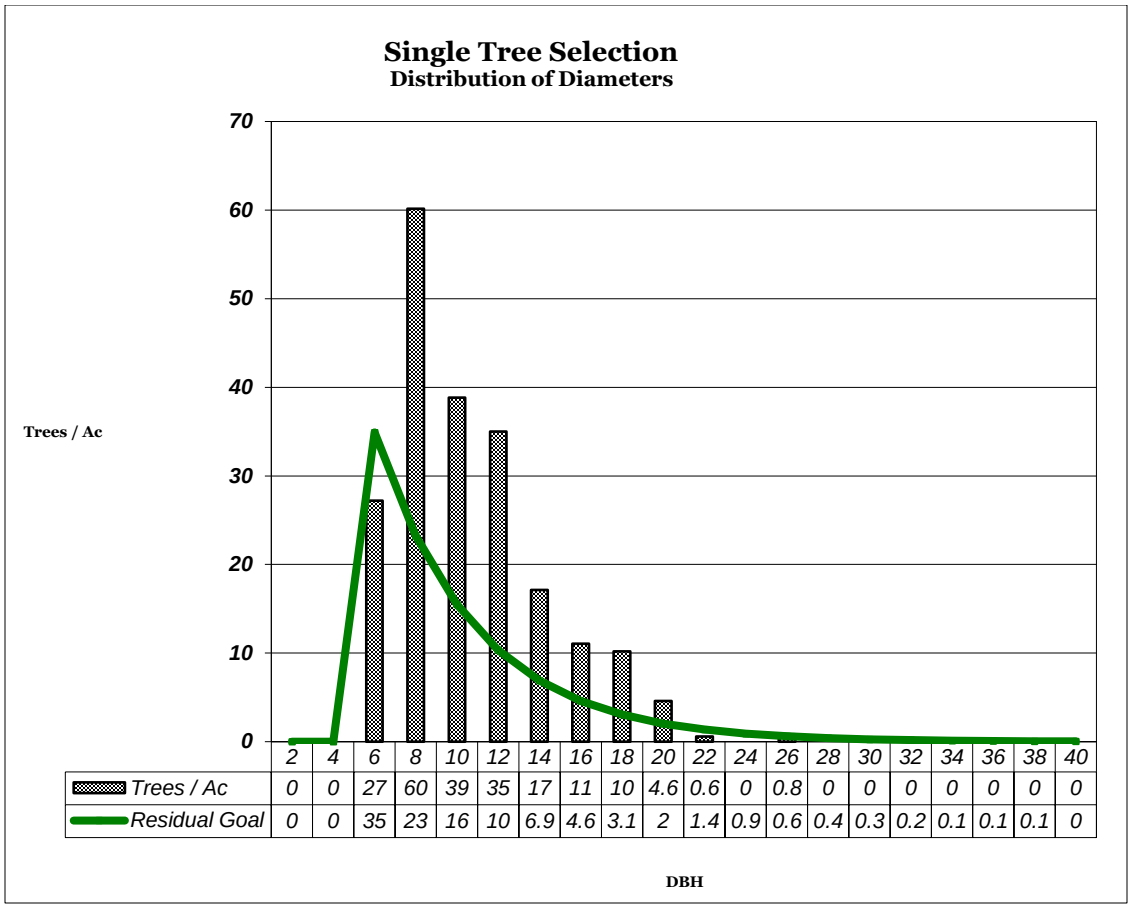
Oak/Hardwood Stand

White ash trees in greater than 10” in diameter will be biased for harvest due to the presence of emerald ash borer (EAB) in Berkshire County. This forest pest has a greater than 99% mortality rate on infected ash trees.

In the northern portion of the sale area, and within this stand, the area shown on MAP 1 indicates an area that will be treated for nuisance American beech. The American beech in this area have extensive infections of beech bark disease (BBD) and has developed into a situation in which stump and root sprouts are at extremely high densities. The density of American beech regeneration is so high that it is negatively impacting the recruitment and diversity of native flora in terms of both trees and ground cover. The treatment will entail the application of herbicide, most likely a mix of triclopyr and/or glyphosate to kill at least 80% of the existing American beech. Healthy beech 10” and greater in diameter, and having no indication of disease, will be biased for retention within the project area.

Through the rest of the stand a single tree selection system will be used (Smith and Lamson, 1982). In this system the stand is harvested according to a curve created by determining the desired residual basal area, the largest diameter tree desired, and an expression of the stand structure for uneven aged management. This method was chosen because the stand is already tending towards an uneven aged condition.

Figure 3 – Diameter Distributions



	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
Trees / Ac	0	0	27	60	39	35	17	11	10	4.6	0.6	0	0.8	0	0	0	0	0	0	0
Residual Goal	0	0	35	23	16	10	6.9	4.6	3.1	2	1.4	0.9	0.6	0.4	0.3	0.2	0.1	0.1	0.1	0

Table 5 – Estimated Harvest and Residual Volumes for Single Tree Selection

		Harvested		Residual		
Species	% to cut	Sawtimber	Cords	Sawtimber	Cords	Basal Area
Eastern White Pine	20	17,796	5	71,185	18.1	4.3
Hemlock	20	20,175	25	80,700	101.2	12.4
Red Spruce	5	3,182	5	60,451	86.4	7.6
Sugar Maple	30	5,318	7	12,408	16.4	2.2
Red Maple	60	36,762	208	24,508	139.0	10.0
White Ash	80	3,545		886		0.2
Black Cherry	30	0		0		0.9
White Birch	60	2,659	15	1,773	9.8	0.9
Yellow Birch	30	5,318	8	12,408	18.5	2.5
Black Birch	30	0		0		0.3
American Beech	80	7,514	198	1,879	49.6	3.1
Red Oak	30	108,320	69	252,747	161.2	34.2
Norway Spruce	100	10,542	72	0	0.0	0.0
Total		221,132	612	518,946	600.1	78.6

Table 6 – Marking Guide for Single Tree Selection

Marking Guide

Trees/ac	DBH range	Current	Goal	Surplus
Pole timber	5-11	126.2	73.7	52.5
Small Sawtimber	11-15	52.1	17.2	34.9
Large Sawtimber	15+	27.3	13.7	13.6
Total		205.6	104.7	100.9

Basal Area (Ft^2/ac)	DBH range	Current	Goal	Surplus
Pole timber	5-11	44.8	23.4	21.4
Small Sawtimber	11-15	43.2	15.5	27.7
Large Sawtimber	15+	45.4	31.1	14.3
Total		133.3	70.0	63.3

During marking activities priority for harvest will be given to those trees that are of poor form, poor vigor, diseased, damaged, etc.

Due to climate change considerations red spruce and eastern hemlock will be biased for retention.

Norway Spruce Plantation

Three, 1 acre, openings will be created within the Norway spruce plantation. Where possible the openings will be centered on existing gaps in the canopy that have recruited native vegetation. The openings will be no less than 100' apart if all of the trees are removed (0 ft^2 of basal area of trees 6" and greater in diameter). The reason

for these openings is to recruit native tree species and begin removing the plantations, which are in a state of decline. The areas in between the openings will not be harvested.

Table 7 – Volumes for Norway Spruce Plantation Group Selection Harvest

Spp	Est BdFt	Est Cords
Eastern White Pine	2,593	0.00
Red Maple	719	7.42
Red Oak	1,374	0.00
Norway Spruce	36,802	68.26
Total	**41,488**	**76**

Short Term and Long Term Conditions

Short Term (Present – 100 years)

Hardwood Stand

Ground cover density, diversity, and distribution are expected to increase. Advance regenerate will develop into desirable growing stock, most likely: birches, maples, some oak, beech, and white ash. Herbicide applications will be used to control significant American beech expansion. Sun exposure and herbicide treatments should limit the growth of beech and provide the opportunity for those more tree and ground cover species to escape beech brush shading prior to crown closure.

Norway Spruce Plantations

Norway spruce plantations will be removed over the next 2 cutting cycles. Improvement thinning within the previously created gaps will occur. Within areas for improvement thinning; healthy native hardwoods (other than striped maple and pin cherry) and conifers will be preferred stock while striped maple, pin cherry, and diseased or otherwise unhealthy hardwoods and conifers will be targeted for removal.

Long Term (100 years +)

Ground cover densities, distribution, and diversity will be maintained through subsequent silvicultural entries. Gap-expansion will be used in those areas that had gaps established in the previous entries. Sugar maple should become more plentiful as competition is reduced through beech brush control and cutting that biases against sugar maple removal. Norway spruce plantations will be completely removed and replaced with a mix of native hardwood and conifers. An uneven-aged condition,

representing the entire spectrum of natural community development from early successional to old growth, will be found throughout the area.

Logging System Requirements

Conventional and mechanical harvesting equipment, other than slashers, will be permitted. Equipment cannot exceed 6 psi ground pressure. South County Road will be used for hauling designated timber off of state owned lands, and the Flat Rock Hill snowmobile trail for forwarding and/or skidding. This area will most likely be open for harvesting all year, provided that soil conditions remain stable. Generally, all trees will be felled into the stand and slash will remain in that location unless required for the skid trail. Deviations from this will be reviewed on a case-by-case basis by the forester-in-charge or their designee. No stream crossings are anticipated.

Haul Roads

The haul road for the sale is South County Road. This road will not require improvements; however, the harvester will be required to return the road to the original condition. The current road profile is anticipated to be sufficient for the activities being conducted.

Skid Trails

Primary skid trail have been identified in MAP 1. Since no record of harvesting exists, and no previous skid trails were located during the stand exam, the installation of all interior skid trails will be required. Skid trails will be marked prior to the start of harvesting activities, and it is understood that minor changes to the routes may be required during the course of logging operations. All proposed changes will be reviewed on a case-by-case basis by the forester-in-charge and/or Program Supervisor as required. Prior to the leaving the harvest areas all skid trails will have water bars installed, and excess disturbance will be mitigated.

Landings

Preliminary landings have been located, and are shown on MAP 1. Additional landings may be required, but are not anticipated. Any additional landings that may be required will use existing openings or gaps, and will not be intended for loading log trucks. Prior to leaving the sale, all landings will be smoothed, logging residue will be moved into the woods, and the landings will be seeded.

REFERENCES

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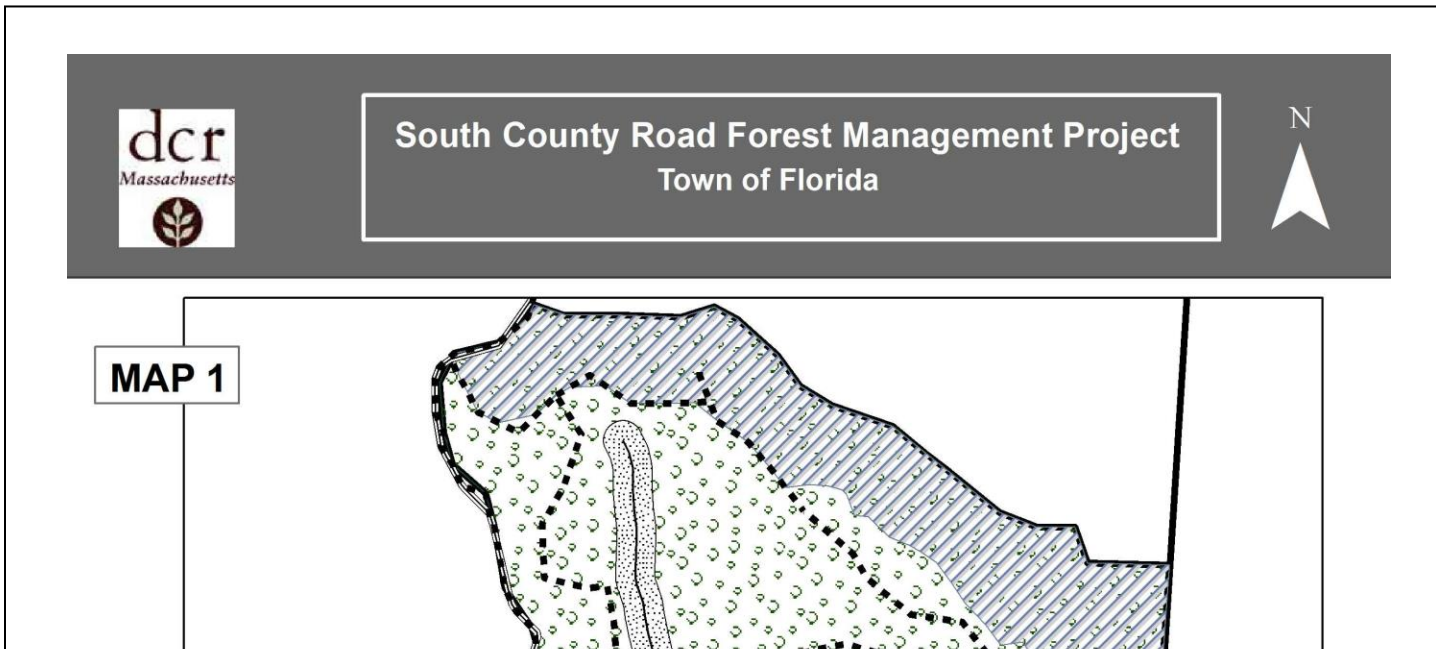

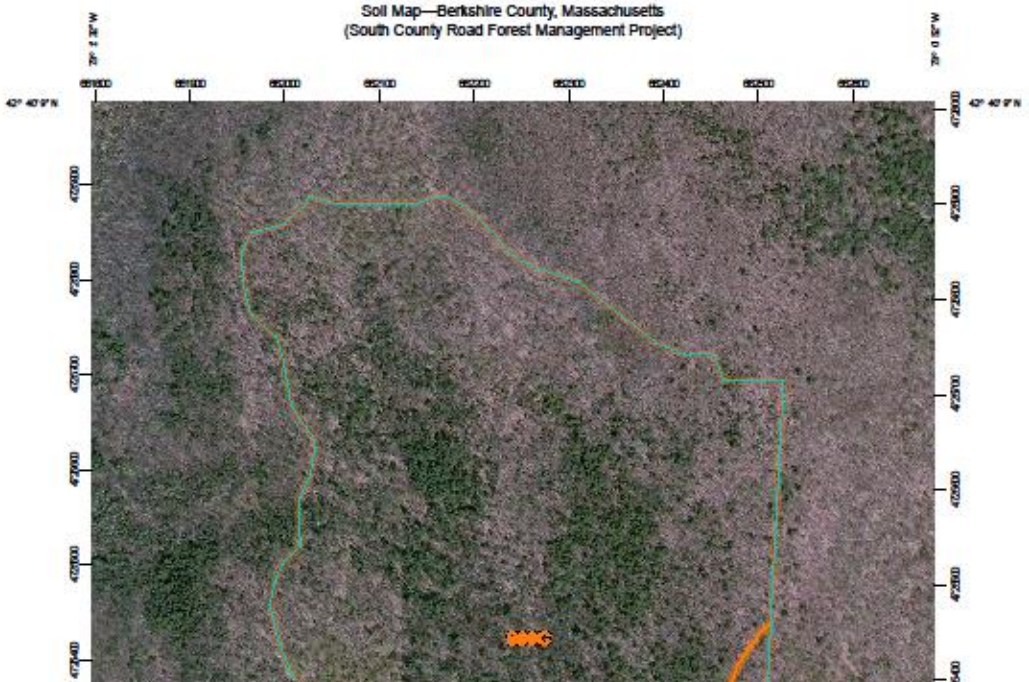
Soil Map—Berkshire County, Massachusetts
(South County Road Forest Management Project)

MAP UNIT SYMBOL	MAP UNIT NAME	ACRES IN PROJECT	% OF PROJECT
905 C	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	2.1	2.1
909 C	Tunbridge-Lyman association, 3 to 15 percent slopes, extremely stony	95.5	97.9
Total Project		97.6	100

MA Department of Conservation and Recreation
Division of State Parks and Recreation
Woodland Zone

The Mission of the Bureau of Forestry Management Forestry Program in lands designated as Woodland on State Forests, Parks and Reservations is to provide ecosystem services and benefits associated with active forest management.

Ecosystem services that are provided through active forest management on the Woodland landscape are:

- ***Production of wood products*** *that is ecologically and economically sustainable benefiting local economies.*

- ***Water*** *quality protection and enhancement of water supply.*

- ***Diverse habitats*** *that range from early seral vegetation to late successional forest encompassing many structural components and provide protection from extreme disturbance events.*

- ***Recreational opportunities*** *that are safe and fitting for their location determined in conjunction with the Operations staff of the Division of Parks and Recreation*

- ***Carbon stock management*** *using innovative and scientific forest management methods for increasing sequestration.*

❖ Forest management on DCR forests, parks, and reservations endeavors to demonstrate excellent forestry practices to private landowners and the public.

❖ The ecosystem services that state lands provide will be balanced across the landscape and the scale of time where they are deemed appropriate.